(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 186 404 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
10.11.2004 Bulletin 2004/46

(51) Int Cl.[7]: **B31B 19/90**

(21) Application number: **01307182.4**

(22) Date of filing: **23.08.2001**

(54) **Zipper segment for transverse direction application to a bag film**

Reissverschluss für das transversale Anbringen an Taschenfolien

Segment de fermeture à glissière pour application transversale à un film pour sachet

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

(30) Priority: **06.09.2000 US 656279**

(43) Date of publication of application:
13.03.2002 Bulletin 2002/11

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EP-A- 0 970 804
US-A- 5 776 045

EP 1 186 404 B1

Description

[0001] US-A-4,909,017 discloses a method for forming reclosable plastic bags wherein the zipper is disposed transverse with respect to the running direction of the web of bag film. One of the zipper profiles is attached to the bag web prior to the web being transformed into a bag tube while the other profile is connected to the bag web, at this point, only by the engagement of the interlocking elements of the profiles. This may be augmented by sealing the ends or the profile sections to each other. It is not until after the bag web is transformed into a tube that both of the profiles are sealed to the bag web.

[0002] A problem that is encountered with such transverse direction bag forming equipment is that as the web of bag film with attached transverse direction zipper segments passes over the forming collar (to begin its transformation from a flat sheet to a tube), the unattached profile tends to lift away from the attached profile. In the worst case, the profiles can become misaligned or separated thereby preventing a proper zipper bag from being formed.

[0003] Another document, EP-A-0 970 804 discloses a method for attaching reclosable zipper strips with male and female profiles to thermoplastic film material, whereby the zipper strip is sealed to the film material at its ends.

[0004] It is the principle object of the present invention to provide a method for maintaining the zipper profiles, including the un-attached profile, on the bag film web as the web feeds to and through associated transverse direction bag making equipment.

[0005] The above and other beneficial objects and advantages are attained in accordance with the present invention by providing a zipper segment for transverse direction application to a bag film web in which the profiles are of unequal lengths and joined together at their ends. As a result, the shorter profile is placed in tension. During bag formation the longer profile is initially attached to the bag film web and the shorter side is attached only by the engagement of the profile interlocking members and end seals. The shorter side, which is not directly attached to the web, nonetheless remains close to the web as a result of the tension imparted on the short side by the longer side.

[0006] A particular embodiment in accordance with this invention will now be described with reference to the accompanying drawings; in which:-

Fig. 1 is a perspective view of swaging equipment used to form zipper segments having profiles of unequal lengths;
Fig. 2 is a perspective view of equipment used to attach zipper segments to a web of bag film; and,
Fig. 3 is a side elevational view of the equipment of Fig. 2.

[0007] In Fig. 1 a zipper 10 is played off spool 12. The zipper 10 consists of two profiles 14, 16 containing interlocked engagement elements (not shown), which may be of any configuration but usually comprise a male shape and a complementary female shape. As zipper 10 plays off spool 12 it is twisted at 18 and then fed to a sealing apparatus 20 which consists of a heated bar 22 and an unheated platen 24. The heated bar 22 periodically comes down on the platen capturing a length of zipper therebetween, fusing the profiles 14, 16 together in the seal area 26. The action of the heated bar 22 causes a swaging of the profile 14 that it encounters, thereby lengthening that profile with respect to the mating profile 16 that rides on the unheated platen 24. The increased length of the segment of profile 14 between adjacent seals 26 is reflected in crimps 28 at the ends of each seal area 26.

[0008] The zipper is then untwisted at 30 and brought under the bag film web 38 to knife 32 which bisects each seal 26 thereby freeing segments 34 from the zipper supply. The detached segments 34 are picked up by a vacuum drum 36 and deposited at spaced intervals under bag film web 38. It should be noted that the longer profile 14 is deposited in contact with the film and then sealed to the bag web 38 by sealing bar 40. The sealing operation is such as to seal only the longer profile 14 to the film web. This may be accomplished by conventional sealing techniques such as placing a non-seal coating on facing surfaces of the profiles 14, 16, by extending the flange of profile 14 to extend beyond that of profile 16 so that only the extended flange is engaged by the sealing bar, by controlling the heat of seal bar 40 or by any other conventional method. The web with the attached zipper segment is then fed to conventional TD bag making equipment for conversion into a bag.

Claims

1. A method of making a web of bag making film (38) comprising the steps of:

   forming a zipper segment (10) having profiles (14,16) with interlocking elements, with one of said profiles (14) being longer than the other (16) of said profiles;
   joining the ends of said profiles (14,16) to place the shorter one (16) of said profiles in tension; and,
   sealing said longer profile (14) to said film (38) transversely to a running direction of said film (38).

2. A method in accordance with claim 1, wherein said zipper segment (10) is formed by passing a continuous zipper between a seal bar (22) and an anvil (24) to seal said profiles (14,16) to one another, with one (14) of said profiles contacting the seal bar (22)

and the other (16) of said profiles contacting the anvil (24), said seal bar (22) being heated with respect to said anvil (24).

3. A method in accordance with claim 2, wherein said seal bar (22) swages the profile (14) in contact with it thereby to lengthen that profile (14) with respect to the other profile (16).

4. A method in accordance with any preceding claim, comprising the further step of severing said continuous zipper through adjacent sealing sections to form said segment.

5. A web of bag making material comprising:

a bag making film (38) and a segment (34) of zipper (10) attached to said film (38) transverse to a running direction of said web (38), said zipper segment (34) including a first profile (14) sealed to said film (38) and a second profile (16) having an interlocking element engaged with a complementary interlocking element of said first profile (14) the ends of said profiles (14,16) being joined to one another, **characterised in that** said first profile (14) is longer than said second profile (16) said second profile (16) being tension.

Patentansprüche

1. Verfahren zur Herstellung einer Beutelherstellfolienbahn (38), die Schritte aufweisend:

Bilden eines Reißverschlusssegments (10) mit Profilen (14, 16) mit Verriegelungselementen, wobei eines der Profile (14) länger ist als das andere (16) der Profile;
Verbinden der Enden der Profile (14, 16), um das kürzere (16) der Profile unter Spannung zu setzen; und
Versiegeln des längeren Profils (14) mit der Folie (38) quer zu einer Laufrichtung der Folie (38).

2. Verfahren nach Anspruch 1, wobei das Reißverschlusssegment (10) gebildet wird durch Hindurchführen eines kontinuierlichen Reißverschlusses zwischen einer Schweißstange (22) und einem Amboss (24), um die Profile (14, 16) miteinander zu versiegeln, wobei eines (14) der Profile die Schweißstange (22) kontaktiert und das andere (16) der Profile den Amboss (24) kontaktiert, und wobei die Schweißstange (22) mit Bezug auf den Amboss (24) erhitzt wird.

3. Verfahren nach Anspruch 2, wobei die Schweißstange (22) das Profil in Kontakt mit ihm tiefzieht, um dadurch das Profil (14) mit Bezug auf das andere Profil (16) zu verlängern.

4. Verfahren nach irgendeinem der vorhergehenden Ansprüche, das den weiteren Schritt des Abtrennens des kontinuierlichen Reißverschlusses durch benachbarte Versiegelungsbereiche zur Bildung des Segments aufweist.

5. Bahn aus Beutelbildungsmaterial, aufweisend:

eine Beutelherstellfolie (38) und ein Segment (34) eines Reißverschlusses (10), das an der Folie (38) quer zu einer Laufrichtung der Bahn (38) befestigt ist, wobei das Reißverschlusssegment (34) ein erstes Profil (14), das an der Folie (38) angesiegelt ist, und ein zweites Profil (16) mit einem Verriegelungselement, das mit einem komplementären Verriegelungselement des ersten Profils (14) in Eingriff ist, aufweist, wobei die Enden der Profile (14, 16) miteinander verbunden sind,

dadurch gekennzeichnet, dass das erste Profil (14) länger ist als das zweite Profil (16), wobei das zweite Profil unter Spannung steht.

Revendications

1. Procédé de fabrication d'une feuille continue de pellicule de fabrication de sachets (38) comprenant les étapes consistant à:

former un segment de fermeture à glissière (10) comprenant des profils (14, 16) avec des éléments emboîtables, l'un desdits profils (14) étant plus long que l'autre (16) desdits profils;
joindre les extrémités desdits profils (14, 16) afin de mettre le plus court (16) desdits profils en tension; et
souder ledit plus long profil (14) à ladite pellicule (38) transversalement à une direction de transport de ladite pellicule (38).

2. Procédé selon la revendication 1, dans lequel ledit segment de fermeture à glissière (10) est formé par passage d'une fermeture à glissière entre une barre de scellement (22) et une enclume (24) afin de souder lesdits profils (14, 16) l'un à l'autre, l'un (14) desdits profils étant en contact avec la barre de scellement (22) et l'autre (16) desdits profils étant en contact avec l'enclume (24), ladite barre de scellement (22) étant chauffée par rapport à ladite enclume (24).

3. Procédé selon la revendication 2, dans lequel ladite

barre de scellement (22) emboutit le profil (14) en contact avec elle pour allonger ce profil (14) par rapport à l'autre profil (16).

4. Procédé selon l'une quelconque des revendications précédentes, comprenant l'étape supplémentaire consistant à sectionner ladite fermeture à glissière continue à travers des sections de soudure adjacentes afin de former ledit segment.

5. Feuille continue de matériau de fabrication de sachets, comprenant:

une pellicule de fabrication de sachets (38) et un segment (34) de fermeture à glissière (10) attaché à ladite pellicule (38) transversalement à une direction de transport de ladite feuille continue (38), ledit segment de fermeture à glissière (34) comprenant un premier profil (14) soudé à ladite pellicule (38) et un second profil (16) ayant un élément emboîtable engagé avec un élément emboîtable complémentaire dudit premier profil (14), les extrémités desdits profils (14, 16) étant jointes l'une à l'autre, **caractérisée en ce que** ledit premier profil (14) est plus long que ledit second profil (16), ledit second profil (16) étant en tension.

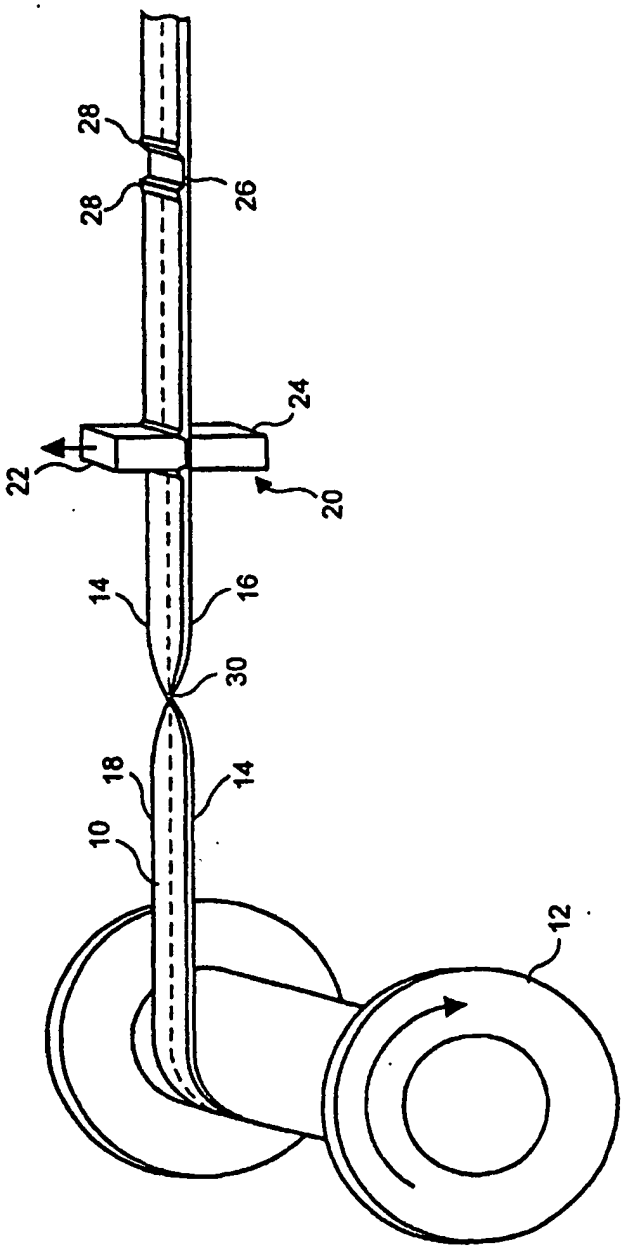

FIG. 1

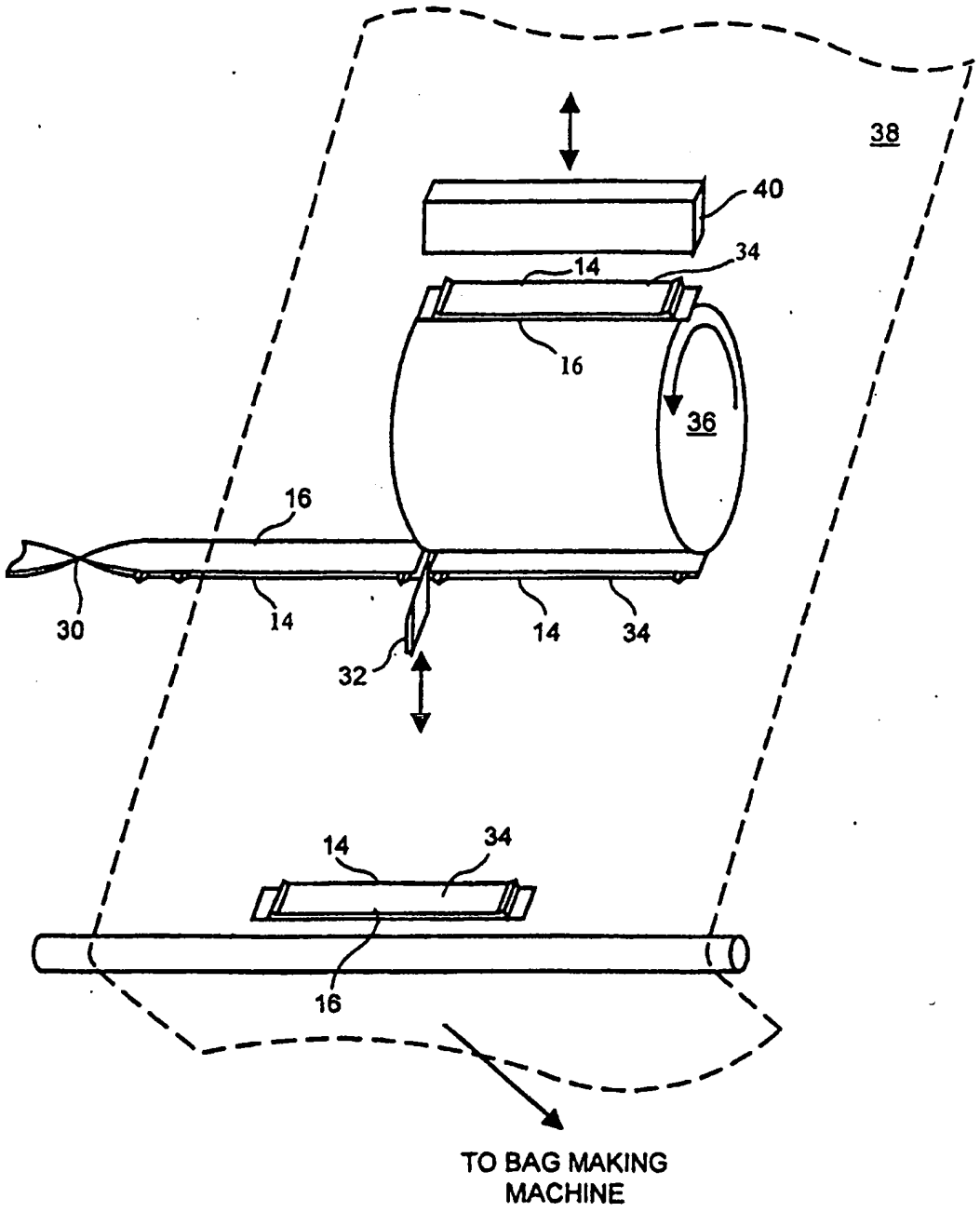

FIG. 2

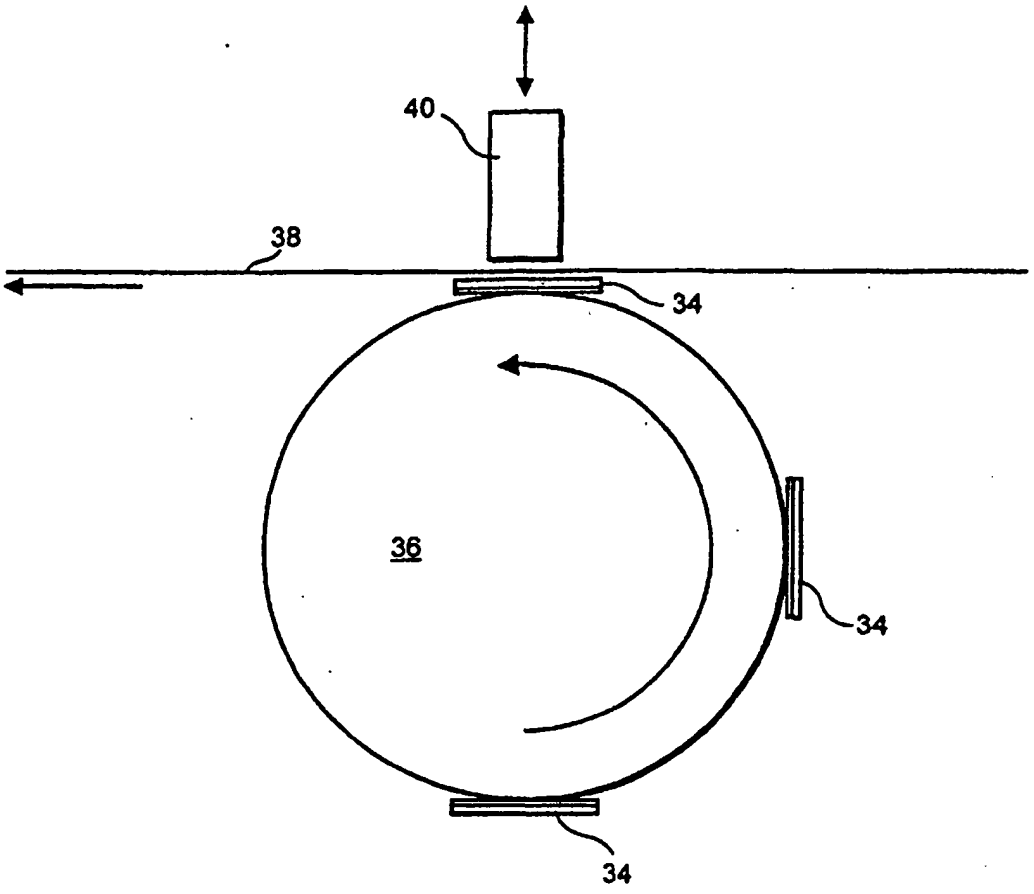

FIG. 3

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European Patent Office
Office européen des brevets

(11) EP 1 186 404 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.03.2002 Bulletin 2002/11

(51) Int Cl.[7]: **B31B 19/90**

(21) Application number: **01307182.4**

(22) Date of filing: **23.08.2001**

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AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **06.09.2000 US 656279**

(71) Applicant: **ILLINOIS TOOL WORKS INC.**
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(54) Zipper segment for transverse direction application to a bag film

(57) A zipper segment (34) for transverse direction application to a bag film web (38) in which the profiles (14,16) are of unequal lengths and joined together at their ends. As a result, the shorter profile (16) is placed in tension. During bag formation the longer profile (14) is initially attached to the bag film web (38) and the shorter side (16) is attached only by the engagement of the profile interlocking members and end seals (26). The shorter side (16), which is not directly attached to the web (38), nonetheless remains close to the web (38) as a result of the tension imparted on the short side (16) by the longer side (14).

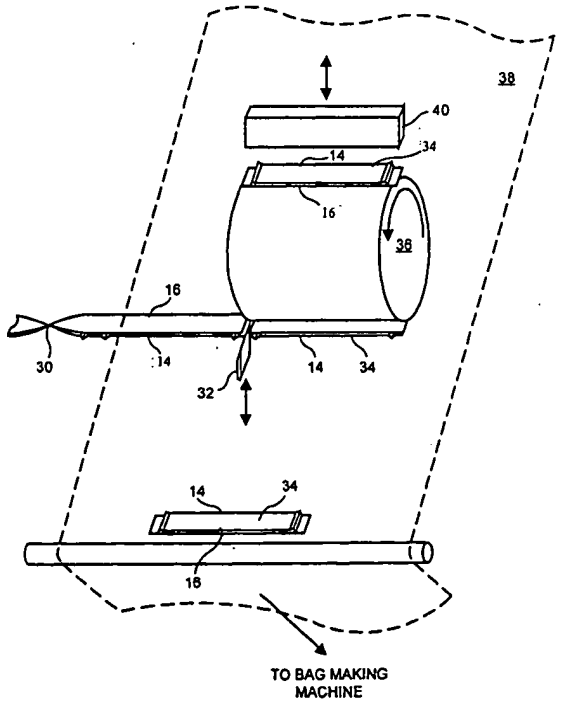

FIG. 2

EP 1 186 404 A2

Description

[0001] US-A-4,909,017 discloses a method for forming reclosable plastic bags wherein the zipper is disposed transverse with respect to the running direction of the web of bag film. One of the zipper profiles is attached to the bag web prior to the web being transformed into a bag tube while the other profile is connected to the bag web, at this point, only by the engagement of the interlocking elements of the profiles. This may be augmented by sealing the ends of the profile sections to each other. It is not until after the bag web is transformed into a tube that both of the profiles are sealed to the bag web.

[0002] A problem that is encountered with such transverse direction bag forming equipment is that as the web of bag film with attached transverse direction zipper segments passes over the forming collar (to begin its transformation from a flat sheet to a tube), the unattached profile tends to lift away from the attached profile. In the worst case, the profiles can become misaligned or separated thereby preventing a proper zipper bag from being formed.

[0003] It is the principle object of the present invention to provide a method for maintaining the zipper profiles, including the un-attached profile, on the bag film web as the web feeds to and through associated transverse direction bag making equipment.

[0004] The above and other beneficial objects and advantages are attained in accordance with the present invention by providing a zipper segment for transverse direction application to a bag film web in which the profiles are of unequal lengths and joined together at their ends. As a result, the shorter profile is placed in tension. During bag formation the longer profile is initially attached to the bag film web and the shorter side is attached only by the engagement of the profile interlocking members and end seals. The shorter side, which is not directly attached to the web, nonetheless remains close to the web as a result of the tension imparted on the short side by the longer side.

[0005] A particular embodiment in accordance with this invention will now be described with reference to the accompanying drawings; in which:-

Fig. 1 is a perspective view of swaging equipment used to form zipper segments having profiles of unequal lengths;
Fig. 2 is a perspective view of equipment used to attach zipper segments to a web of bag film; and,
Fig. 3 is a side elevational view of the equipment of Fig. 2.

[0006] In Fig. 1 a zipper 10 is played off spool 12. The zipper 10 consists of two profiles 14, 16 containing interlocked engagement elements (not shown), which may be of any configuration but usually comprise a male shape and a complementary female shape. As zipper 10 plays off spool 12 it is twisted at 18 and then fed to a sealing apparatus 20 which consists of a heated bar 22 and an unheated platen 24. The heated bar 22 periodically comes down on the platen capturing a length of zipper therebetween, fusing the profiles 14, 16 together in the seal area 26. The action of the heated bar 22 causes a swaging of the profile 14 that it encounters, thereby lengthening that profile with respect to the mating profile 16 that rides on the unheated platen 24. The increased length of the segment of profile 14 between adjacent seals 26 is reflected in crimps 28 at the ends of each seal area 26.

[0007] The zipper is then untwisted at 30 and brought under the bag film web 38 to knife 32 which bisects each seal 26 thereby freeing segments 34 from the zipper supply. The detached segments 34 are picked up by a vacuum drum 36 and deposited at spaced intervals under bag film web 38. It should be noted that the longer profile 14 is deposited in contact with the film and then sealed to the bag web 38 by sealing bar 40. The sealing operation is such as to seal only the longer profile 14 to the film web. This may be accomplished by conventional sealing techniques such as placing a non-seal coating on facing surfaces of the profiles 14, 16, by extending the flange of profile 14 to extend beyond that of profile 16 so that only the extended flange is engaged by the sealing bar, by controlling the heat of seal bar 40 or by any other conventional method. The web with the attached zipper segment is then fed to conventional TD bag making equipment for conversion into a bag.

Claims

1. A method of making a web of bag making film (38) comprising the steps of:

   forming a zipper segment (10) having profiles (14,16) with interlocking elements, with one of said profiles (14) being longer than the other (16) of said profiles;
   joining the ends of said profiles (14,16) to place the shorter one (16) of said profiles in tension; and,
   sealing said longer profile (14) to said film (38) transversely to a running direction of said film (38).

2. A method in accordance with claim 1, wherein said zipper segment (10) is formed by passing a continuous zipper between a seal bar (22) and an anvil (24) to seal said profiles (14,16) to one another, with one (14) of said profiles contacting the seal bar (22) and the other (16) of said profiles contacting the anvil (24), said seal bar (22) being heated with respect to said anvil (24).

3. A method in accordance with claim 2, wherein said

seal bar (22) swages the profile (14) in contact with it thereby to lengthen that profile (14) with respect to the other profile (16).

4. A method in accordance with any preceding claim, comprising the further step of severing said continuous zipper through adjacent sealing sections to form said segment.

5. A web of bag making material comprising:

a bag making film (38) and a segment (34) of zipper (10) attached to said film (38) transverse to a running direction of said web (38), said zipper segment (34) including a first profile (14) sealed to said film (38) and a second profile (16) having an interlocking element engaged with a complementary interlocking element of said first profile (14), wherein said first profile (14) is longer than said second profile (16) and the ends of said profiles (14,16) are joined to one another thereby to place said second profile (16) in tension.

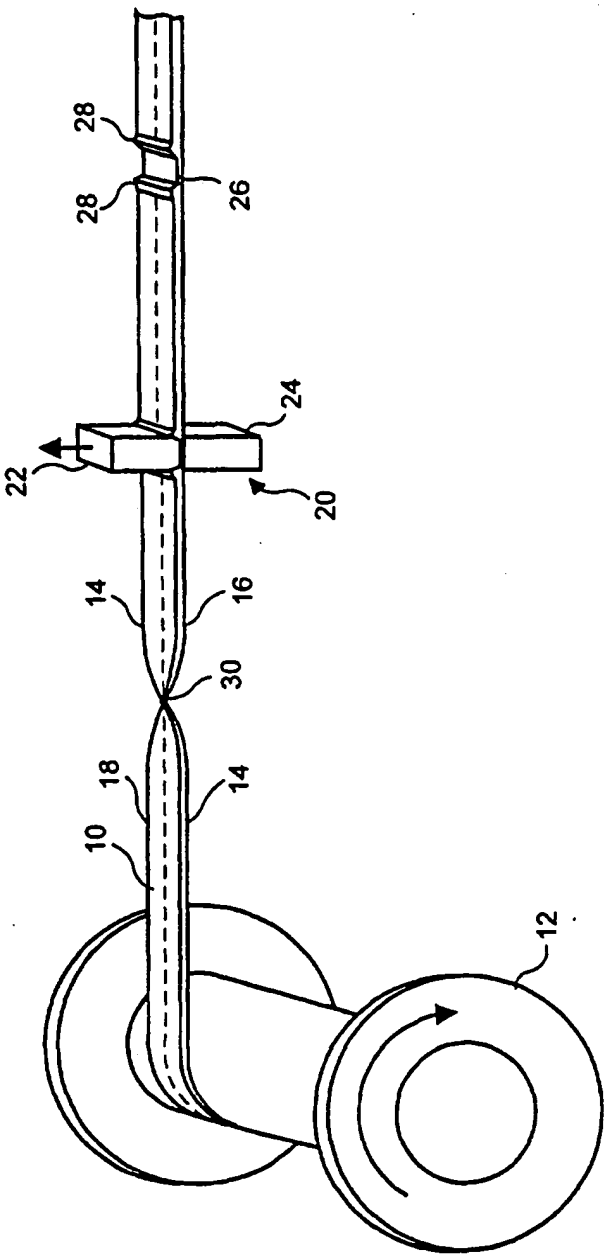

FIG. 1

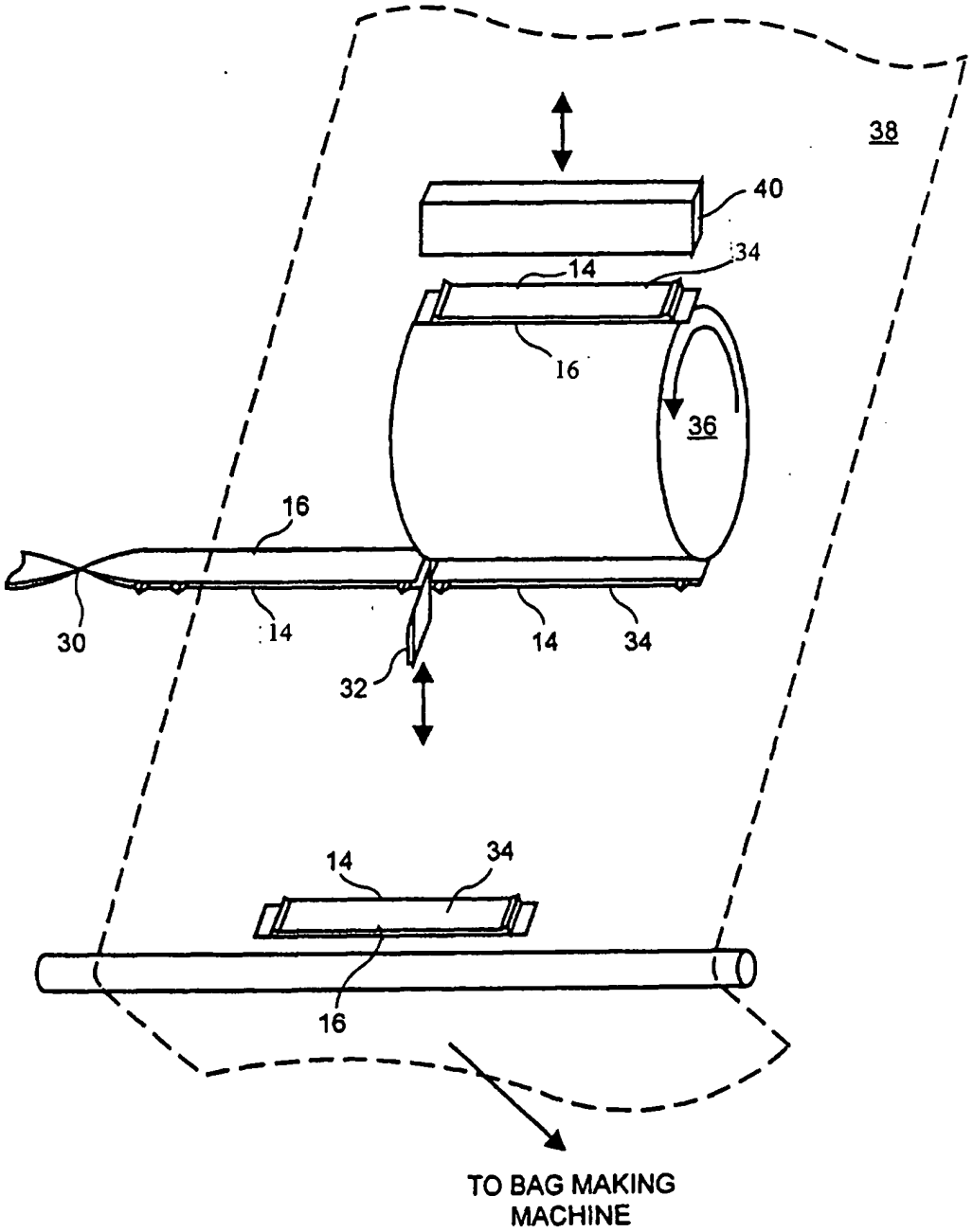

FIG. 2

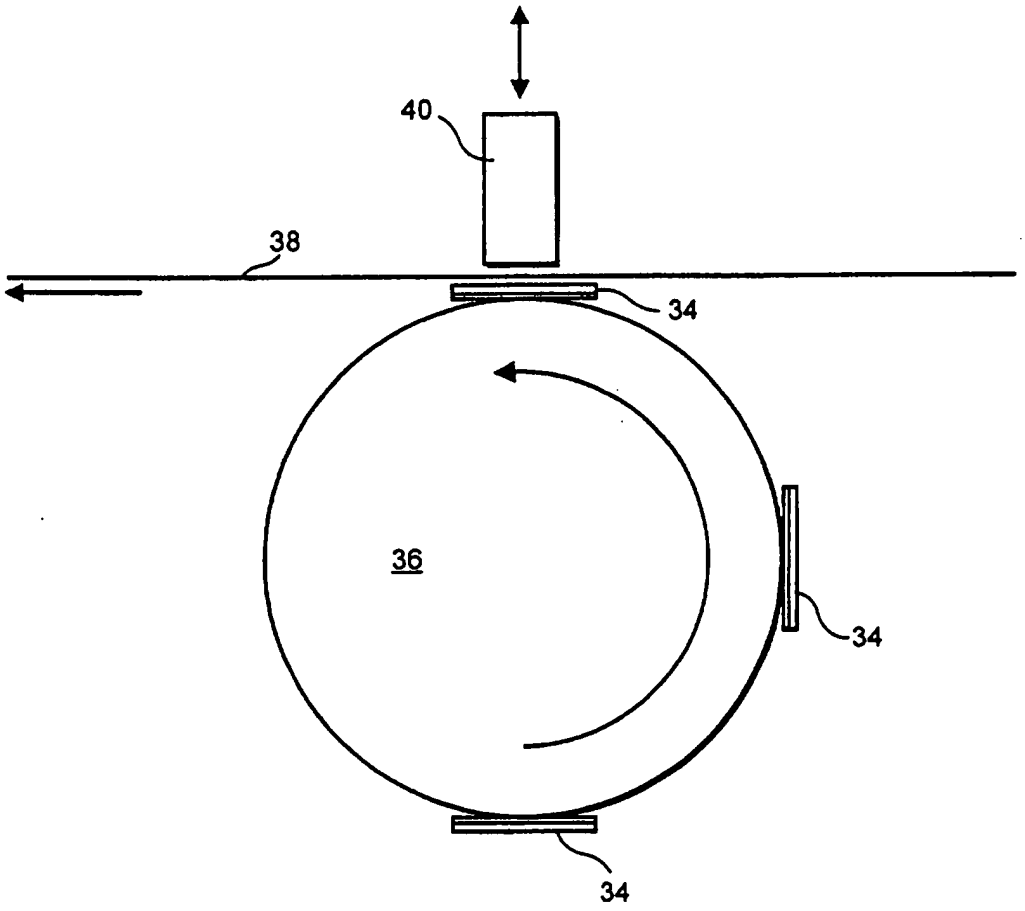

FIG. 3

(19) Europäisches Patentamt
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(11) EP 1 186 404 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
29.01.2003 Bulletin 2003/05

(43) Date of publication A2:
13.03.2002 Bulletin 2002/11

(21) Application number: **01307182.4**

(22) Date of filing: **23.08.2001**

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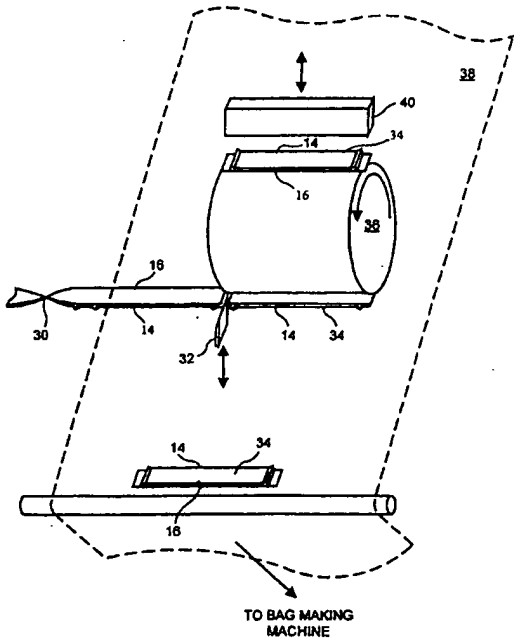

FIG. 2

EP 1 186 404 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 30 7182

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	US 5 776 045 A (BODOLAY MICHAEL J ET AL) 7 July 1998 (1998-07-07) * column 4, last paragraph - column 6, paragraph 2; figures *	1-5	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B31B
B29D
B65D
B65B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	9 December 2002	Pipping, L

CATEGORY OF CITED DOCUMENTS

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09-12-2002

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